Trade and Industrial Education
Course: Electrical I
Course Code # 5733
2 Credit

School Year _____

Term:____Fall____Spring

Student:	Grade:
Teacher:	School:
Number of Competencies in Course:	**57**
Number of Competencies Mastered:	
Percent of Competencies Mastered:	

STANDARD 1.0: Students will demonstrate leadership, citizenship, and teamwork skills required for success in the school, community, and workplace.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
1.1	Exhibit positive leadership skills.		
1.2	Participate in SkillsUSA-VICA as an integral part of classroom instruction.		
1.3	Assess situations and apply problem-solving and decision-making skills to particular client relations in the community, and workplace.		
1.4	Demonstrate the ability to work cooperatively with others in a professional setting.		

STANDARD 2.0: Students will assume responsibility for the safety of themselves, their coworkers, and bystanders.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
2.1	Implement safety procedures established by the Environmental Protection Agency (EPA), Occupational Safety & Health Administration (OSHA), and Hazard Communication (HazCom) regulations.		
2.2	Comply with Occupational Safety & Health Administration (OSHA) rules and regulations.		
2.3	Analyze and categorize safety and health hazards and their prevention and treatment in the construction industry.		
2.4	Exhibit acceptable dress and personal grooming identified by the construction industry.		
2.5	Demonstrate first aid practices.		
2.6	Pass with 100 % accuracy a written examination relating to safety issues.		
2.7	Pass with 100% accuracy a performance examination relating to safety.		
2.8	Maintain a portfolio record of written safety examinations and equipment examinations for which the student has passed an operational checkout by the instructor.		

STANDARD 3.0: Students will interpret, lay out, and fabricate in conformance to construction drawings and written specifications.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
3.1	Interpret dimensions and locations of components that are explicitly dimensioned in construction drawings and written specifications.		
3.2	Scale dimensions that are not explicitly included in construction drawings.		
3.3	Interpret plan and elevation views shown in construction drawings.		
3.4	Recognize and correctly interpret lines and symbols commonly used in construction drawings.		
3.5	Make layouts of locations and elevations of structural elements, such as forms and electrical and plumbing stub-ups, based on job site control points on construction drawings.		

STANDARD 4.0: Students will use safe practices when working with electrical systems.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
4.1	Evaluate the potential risk of injury from electrical shock, burns, and arc blasts.		
4.2	Research various types, applications, and care of protective equipment for electrical workers.		
4.3	Practice industry and company safety policies and standards.		
4.4	Evaluate the potential risk of injury from non-electrical risks.		

STANDARD 5.0: Students will analyze, construct, and evaluate DC circuits.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
5.1	Research the relationship among the variables expressed in Ohm's Law.		
5.2	Calculate unknown values of current, voltage, or resistance in resistive DC circuits using Ohm's Law.		
5.3	Calculate unknown values of current, voltage, resistance, or power in resistive DC circuits using the power formulas.		
5.4	Calculate the resistance of conductor, given the resistivity of the metal from which it's made, it's cross-sectional area, and it's length.		
5.5	Conduct electrical tests using appropriate test equipment.		
5.6	Analyze DC resistive circuits.		

STANDARD 6.0: Students will research and use as a resource the National Electrical Code (NEC).

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
6.1	Select specific information relevant to an assigned task related to conductors in the National Electrical Code (NEC).		

STANDARD 7.0: Students will analyze the requirements of and install residential electrical systems.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
7.1	Calculate electrical loads based on information in residential blueprints.		
7.2	Design residential service equipment based on residential blueprints and applicable requirements.		
7.3	Install all components typical of residential electrical systems.		

STANDARD 8.0: Students will analyze, design, and assemble both single and polyphase AC circuits.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
8.1	Research the effects of parameters unique to AC circuits, such as inductance, capacitance, reactance, impedance, AC power, and power factor.		
8.2	Determine the power factor of a circuit.		
8.3	Evaluate the construction and operations of transformers, both single phase and polyphase.		

STANDARD 9.0 Students will analyze electrical grounding practice and demonstrate correct grounding in accordance with the National Electrical Code.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
9.1	Evaluate the need for electrical grounding, as related to prevention of electrical shock.		
9.2	Utilize effective grounding practices, as prescribed by the National Electrical Code (NEC) and local code.		
9.3	Analyze ground elements for services, such as water pipes and grounding electrodes.		

STANDARD 10.0: Students will demonstrate splicing, terminating, and insulating of conductors.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
10.1	Research National Electrical Code (NEC) and local code requirements for splicing, terminating, and insulating of conductors.		
10.2	Demonstrate splicing, terminating, and insulating of conductors.		

STANDARD 11.0: Students will install common types of conduit.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
11.1	Select type and size of conduit for given electrical installations in accordance with National Electrical Code (NEC) and local codes.		
11.2	Demonstrate electrical installations with electrical metal tubing (EMT) and polyvinyl chloride (PVC) conduit.		
11.3	Demonstrate electrical installations with intermediate metal conduit (IMC) and rigid conduit.		

STANDARD 12.0: Students will install conductors in accordance with NEC and local codes.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
12.1	Select and physically identify conductors and cables by accepted industry designation and suitably under National Electrical Code (NEC).		
12.2	Pull conductors into conduits and raceways.		
12.3	Connect conductors according to National Electrical Code (NEC).		

STANDARD 13.0 Students will identify switches, receptacles, and label disconnect devices as specified by National Electrical Code (NEC) and Occupational Safety and Health Administration (OSHA) regulations.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
13.1	Categorize switches as to type, intended use, and the switch's compatible conductors.		
13.2	Analyze requirements for proper labeling of disconnect devices as specified by National Electrical Code (NEC) and Occupational Safety and Health		
	Administration (OSHA) regulations.		
13.3	Evaluate switch enclosures as to type and intended use and National Electrical Manufacturers Association (NEMA) classification.		
13.4	Evaluate receptacles based on voltage and current capacities.		
13.5	Demonstrate proper wiring techniques when terminating conductors and devices.		

STANDARD 14.0 Students will pull conductors through conduit and cable trays.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
14.1	Plan and set up a cable pull through conduit and cable trays.		
14.2	Compare manual and power fish-tape or cable-puller systems.		
14.3	Demonstrate cable pull through assorted conduit configurations.		

STANDARD 15.0: Students will install commercial electric services or mockups.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
15.1	Install a three-phase load center, disconnects, meter equipment, a services entrance, and ground systems.		
15.2	Install and connect star- and delta-connected three-phase service equipment.		
15.3	Install and connect current and potential transformers in a commercial mockup.		
15.4	Correctly wire three-phase 277/480-volt services with combined lighting and motor loads.		

Additional Comments _____